uterus. Those found in this situation are smaller than those of the abdominal cavity. In these bodies, Keber has observed changes resembling the formation of the micropyle in the ovulum, and for that and other reasons regards these vesicles as ova. But for further discussion of this subject we refer the reader to Keber's monograph.—*Edinburgh Med. and Surg. Journ.*, October, 1854.

2. *Histology of the Retina.*—The observations of GEGENBAUR, KOLLIKER, LEYDIG, H. MULLER, and VIRCHOW, on the body of a beheaded criminal, though chiefly of value in a physiological aspect, throw light on some hitherto obscure points in normal histology.

In some investigations on the retina, it was found that, in the neighbourhood of the yellow spot, the cones are smaller, but of greater length, and closely pressed together, while, external to it, the rods become interposed. The cones, in this situation, were scarcely pyriform, had a pretty uniform thickness of 0.002‴, had no point, and were from 0.012‴—0.014‴ in length. At the periphery of the retina, these little bodies were thicker, assumed rapidly a more pyriform or oval shape; so that, with a length of 0.008‴, their greatest breadth was 0.003‴—0.004‴. Their somewhat conical points, which, in the peripheral parts, were marked off by a transverse line, had a length of about 0.006‴; the isolated rods were about 0.0008‴—0.0009‴ in breadth, and 0.012‴—0.014‴ long. It was also observed, by careful focalizing, that the points of the cones lay somewhat deeper than the extremities of the rods. Vertical sections through the yellow spot showed a remarkable thinness in this situation; the yellow diffused colour had its seat in the middle layers; but little, if at all, in the inner cell and outer rod-layers.

BERGMANN, of Rostock, had an opportunity of investigating the structures of the eye in the case of a beheaded criminal, six hours after death. His views differ somewhat from those of Kölliker.

Half of one retina was examined fresh; the section had been made through the middle of the yellow spot, behind which only small cones were found, some with numerous rows of rods between them; but this part of the investigation appears to have been very incomplete, owing to the structures breaking up into fragments, the localities of which could not be determined.

The second eye was prepared and hardened before section, and consequently the retina exhibited no folds; but there were some differences of level, owing to the difference of thickness in different parts, while, probably, a great part resulted from the action of the chromic acid. The small angular fovea centralis lay very sharply defined in the middle of a somewhat pyriform field, the point of which was turned towards the colliculus of the optic nerve. This space was bounded on its upper and under sides by delicate borders, which did not reach completely to the point; but there intervened between them here a middle elevation, the plica centralis of former observers. The borders inclined towards each other, but did not touch. Bergmann proposes to call this little field the Area centralis retinæ. In this area the nervous layer becomes suddenly very thin. Some sections from the optic nerve to the fovea showed well the particular disposition of the nervous matter in this situation; the layer of ganglionic bodies was found not to be continued over the base of this depression, while both the granular layers, with the intergranular layer, though very thin, were continuous throughout. Bergmann uses this as an argument against the opinion, that the ganglionic bodies constitute the perceptive part of the retina. Kölliker, Hannover, and others, consider the fovea as a physiologically imperfect part. Bergmann describes a peculiar arrangement of the fibres in the neighbourhood of the fovea, by which those coming from the outer granular layer take an oblique course, and finally pass into the inner layer. This observer claims for this portion of the retina a higher physiological importance than is accorded to it by others.—*Brit. and For. Med.-Chirurg. Rev.* April, 1855, from *Henle and Pfeuffer's Zeitschrift*, Bd. v.

3. *Composition and Action of the Gastric Juice.*—Notwithstanding the numerous investigations to which the gastric juice has already been subjected, the observations made by Drs. O. DE GRUNEWALD and DE SCHROEDER on a woman

affected with fistula of the stomach will be read with interest. This woman, aged 35, and enjoying good general health, weighed 53 kilogrammes [nearly 117 lbs. avoirdupois], and was suckling an infant at the time she was under observation. The fistula, which was of two or three years' standing, had doubtless been produced by a perforating ulcer of the stomach. The quantity of gastric juice secreted was estimated, exclusively of the saliva: 65 grammes [a little more than two ounces] per hour, at 584 grammes in the hour, or 14.016 kilogrammes [nearly 31 pounds] daily. This enormous proportion is much greater than that given by Bidder and Schmidt[1]—6.4 kilogrammes [a little more than 14 lbs.] each day. The smallest quantity was collected in the morning, fasting; however, it was never less than from 40 [?] to 400 grammes [about 13 ounces] in the hour. The fluid then obtained was in general clear, serous, and colourless; at other times it was more viscid, it sometimes contained bile, without any sign of functional derangement being present. Sarcinæ were, with the aid of the microscope, pretty often observed.

As to the chemical constitution of the juice, which was investigated by Dr. Schmidt, the fluid obtained early in the morning, while the woman was fasting, was either neutral or slightly alkaline; after food was taken it was always acid. No hydrochloric acid was found in the analysis of several portions of gastric juice collected at different periods of the day; the presence of butyric and lactic acids is more probable. The following is a *résumé* of these analyses. In 1,000 parts he found, water, 956.595; solids, 43.405—the latter consisted of organic matter, 36.603; inorganic, 6.802; the inorganic contained chloride of sodium, 4.633; phosphate of lime, 0.961: of magnesia, 0.260; phosphate of iron, 0.006; potash belonging to the organic substances, 0.363.

The organic substances consisted of coagulable albuminous matter (pepsin), sugar, butyric acid, uncoagulable protein substances, and lactic acid. The organic acids are not considered as primarily present in the gastric secretion, even as products of the ingested aliments; they vary in quantity according to the quality of the nourishment. Hydrochloric acid, on the contrary, has been regarded as an essential compound, although the analyses do not exhibit it, doubtless because it is easily neutralized by the alkalies of the saliva.

In one analysis, Schmidt found free hydrochloric acid, but only in the proportion of two parts in 1,000, a ratio ten times less than in the dog. As to the question whether the gastric juice prevents the saliva converting starch into sugar, as Bidder and Schmidt assert, the authors found that the action of the saliva was not destroyed; they, however, confirm the observation of those chemists that sugar is not to be found in the stomach of the dog, even after the ingestion of boiled starch.

The digestion of protein aliments was examined by introducing into the stomach through the fistula a certain weight of coagulated albumen, meat, &c., inclosed in thin linen bags; the loss of substance of the particles during a given space of time was thus observed, as well as the changes which took place in the microscopic structure of the elements. It was thus found that for protein substances the solvent power of the human gastric juice is far inferior to that of the dog. Solution is perfected in the stomach of the dog in from two to four hours, while in that of man it requires nineteen or twenty hours. Raw meat is better digested by the human stomach than dressed meat, and veal than beef.

As to the microscopic alterations, the primary fasciculi were found after an hour and a half easily separable from one another, without having themselves undergone any change, the sarcolemma was destroyed. After two hours and three-quarters, the primary bundles began to show transverse fissures; after three hours, only striated lamellæ were seen transversely; after three hours and a half, besides quadrilateral lamellæ, there were some primary fasciculi, longitudinally and transversely fissured, frequently denticulated at their extremities; after three hours and three-quarters, the primary fasciculi were two or three times longitudinally divided. After four hours and a half, there was scarcely any solid residue in the stomach, with the exception of a small number of primary bundles, much fissured both longitudinally and transversely, but still exhibiting the transverse striæ. At the end of three hours and a half, or four hours, the stomach was in general empty; the protein substances were then submitted to the influence of the intestinal secretion. As to the digestion of fat, the membrane of the cells is dissolved in the stomach, but the fat itself does not undergo any alteration. Milk, after three-quarters of an hour, formed a thick coagulum, inclosing a large quantity of milk globules and of free fat. At the end of two and a half hours, the casein was observed in part as an amorphous substance, in part as membranous and transparent fragments, with some unaltered milk globules; at the end of three hours and three-quarters scarcely any remained in the stomach.

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[1] Die Verdauungssaefte und der Stoffwechsel; Mitau und Leipzig, 1852, p. 36.

These changes, which in the stomach of this woman required three hours and three-quarters, or four hours and a half, were completed in the stomach of a dog in two hours.—*Dublin Quarterly Journ. of Med. Sci.*, May, 1855, from *Archives Générales de Med.*, Feb. 1855.

4. *Micrological Characters of Lymph.*—A rare and very remarkable case of lesion of the lymphatics has given to M. **Gubler** an opportunity of analyzing this fluid, so seldom in the human subject recorded to have been submitted to chemical or microscopical examination. We, therefore, produce here the most important results of the observation.

A female, in a good state of general health, presented, at the anterior and superior part of the left thigh, about two centimetres below the fold of the groin, several small phlyctenulæ, or translucent vesicles, of the appearance and size of a grain of sago boiled. They were covered only by the epidermis, and appeared manifestly to result from a varicose dilatation of the sub-epidermic lymphatics. They were disposed in two divergent lines, inclosing a very acute angle, the apex of which corresponded very nearly with the opening of the internal saphena; the sides, diverted outwards, were lost before they reached the inguinal region; the superior followed exactly the fold of the groin; the inferior ran a little more transversely. There were four very apparent and prominent vesicles a little lower down, and lying on the border of the sartorius. The largest amongst them, when torn with the point of a needle, gave exit immediately to an opaline fluid, which ran in a little stream down the thigh, falling at the rate of about fifty drops per minute, and this continued until arrested by compression. The smaller vesicles gave exit to but a very small quantity. This liquid, collected in a vessel, coagulated, in from one quarter to half an hour, in the same manner as blood—that is to say, it formed a clot swimming in a fluid; but the serum, so to speak, retained the same colour as the clot, was undistinguishable by the sight, and could only be recognized on shaking the mass.

Submitted to chemical and microscopical analysis, this fluid was found to present the characters assigned to lymph. Other abnormal conditions of the lymphatics existed in this limb, which it is not necessary to specify here. It may be mentioned, however, that on one occasion lymph escaped from a rupture of one of the vesicles, and continued to flow for forty-eight hours; and it has been calculated that about 2,830 grammes, or nearly six pounds, escaped in the twenty-four hours.

Physical properties.—At the moment of exit from the vesicle, the liquid was white, opaque even when seen in drops, having much the appearance of milk deprived of its cream, with a slightly dull yellow tint. It had a strong alkaline reaction, a feeble saline taste, and a scarcely sensible animal odour. As before observed, it separated into a serum and clot, the former still retaining the opaque white colour, and scarcely distinguishable from the latter.

Microscopic examination, with powers from 300 to 500 diameters.—A considerable quantity of yellowish corpuscles occupied the field, similar to those of blood recently withdrawn from the circulation, but of very unequal size. Some had the usual dimensions of blood-corpuscles, but the greater part were sensibly smaller, reaching a diameter of only $\frac{1}{150}$th of a millimetre. Lastly, there existed a certain quantity of coloured corpuscles, like the preceding, but much smaller, being only about half the dimensions in diameter of the larger